

-41-

What is claimed is:

1. A method for operating a monitoring unit operable to receive signals from a mobile transmitter in an electronic location monitoring system, the method comprising:

causing a receiver of the monitoring unit to change a signal reception threshold thereof for receiving signals from the mobile transmitter, in response to proximity of the monitoring unit relative to a reference position whereby said receiver rejects signals received from the mobile transmitter that have a signal strength below said signal reception threshold and receives and processes signals received from the mobile transmitter that have a signal strength above said signal reception threshold.

2. The method of claim 1 wherein changing said signal reception threshold comprises causing said receiver to decrease said signal reception threshold when said monitoring unit is in proximity to said reference position and causing said receiver to increase said signal reception threshold when said monitoring unit is not in proximity to said reference position.

3. The method of claim 2 further comprising detecting proximity of said monitoring unit relative to said reference position.

4. The method of claim 3 further comprising producing a proximity signal for reception by said receiver, in response to detecting said change in proximity of said monitoring unit relative to said reference position, whereby the receiver changes said signal reception threshold in response to said proximity signal.

-42-

5. The method of claim 4 further comprising causing said proximity signal to indicate said monitoring unit is in proximity to said reference position when said monitoring unit is coupled to a docking station.
- 5 6. The method of claim 5 further comprising causing said proximity signal to indicate said monitoring unit is not in proximity to said reference position when said monitoring unit is uncoupled from a docking station.
- 10 7. The method of claim 4 further comprising receiving position signals at said monitoring unit, said position signals representing a geographical position of said monitoring unit, and producing said proximity signal in response to said position signals.
- 15 8. The method of claim 7 causing said proximity signal to indicate said monitoring unit is in proximity to said reference position when said position signals meet a first position criterion.
- 20 9. The method of claim 8 wherein said first position criterion is met when said position signals indicate said monitoring unit is within a first range of said reference position.
- 25 10. The method of claim 9 causing said proximity signal to indicate said monitoring unit is not in proximity to said reference position when said position signals meet a second position criterion.
- 30 11. The method of claim 10 wherein said second position criterion is met when said position signals indicate said monitoring unit is within a second range of said reference position.
12. An apparatus operable to receive signals from a mobile transmitter in an electronic location monitoring system, the apparatus comprising:

-43-

a proximity signal generator operable to generate a proximity signal in response to proximity of the apparatus relative to a reference position;

5 a receiver operable to receive signals from the mobile transmitter, said receiver having a signal reception threshold responsive to said proximity signal, such that said receiver rejects signals from the mobile transmitter that have a signal strength below said signal reception threshold and receives
10 signals from the mobile transmitter that have a signal strength above said signal reception threshold; and

a processor circuit operable to process signals received by said receiver to produce processed signals, said processor circuit
15 being operable to communicate with a transmitter to cause the transmitter to transmit said processed signals to a monitoring station.

20 **13.** The apparatus of claim **12** wherein said receiver is operable to decrease said signal reception threshold when said proximity signal indicates the apparatus is in proximity to said reference position and wherein said receiver is operable to increase said signal reception threshold when said proximity signal indicates apparatus is not in proximity to said reference position.

25 **14.** The apparatus of claim **13** wherein said proximity signal generator comprises a detector operable to detect proximity of said apparatus to said reference position.

30 **15.** The apparatus of claim **14** wherein said detector is operable to detect coupling of said apparatus to a docking station, and to cause said proximity signal to indicate said apparatus is in proximity to said

-44-

reference position when said apparatus is coupled to the docking station.

- 5 **16.** The apparatus of claim **15** wherein said detector is operable to detect uncoupling of said receiver from said docking station and to cause said proximity signal to indicate said apparatus is not in proximity to said reference position when said apparatus is uncoupled from the docking station.
- 10 **17.** The apparatus of claim **14** wherein said detector comprises a position signal receiver operable to receive position signals representing a geographical position of said apparatus, said proximity signal generator being operable to produce said proximity signal in response to said position signals.
- 15 **18.** The apparatus of claim **17** wherein said detector is operable to cause said proximity signal to indicate said apparatus is in proximity to said reference position when said position signals meet a first position criterion.
- 20 **19.** The apparatus of claim **18** wherein said detector is configured to determine said first position criterion is met when said position signals indicate said apparatus is within a first range of said reference position.
- 25 **20.** The apparatus of claim **19** wherein said detector is operable to cause said proximity signal to indicate said apparatus is not in proximity to said reference position when said position signals meet a second position criterion.
- 30 **21.** The apparatus of claim **20** wherein said detector is configured to determine said second position criterion is met when said position

-45-

signals indicate said apparatus is within a second range of said reference position.

5 **22.** The apparatus of claim **17** wherein said position signal receiver comprises a global positioning system (GPS) signal receiver.

23. The apparatus of claim **17** wherein said position signal receiver includes a wireless receiver operable to receive position signals from a wireless communication network.

10 **24.** The apparatus of claim **17** wherein said position signal receiver comprises a message receiver operable to receive messages from a messaging system

15 **25.** The apparatus of claim **24** wherein said message receiver is operable to receive messages from a Short Messaging System (SMS).

26. The apparatus of claim **12** further comprising a modular battery unit, said apparatus being incorporated into said modular battery unit.

20 **27.** The apparatus of claim **26** further comprising a first mobile wireless transceiver powered by said modular battery unit and in communication with said apparatus such that said wireless transceiver is operable to transmit said processed signals to the monitoring station.

25 **28.** The apparatus of claim **12** wherein said processor circuit is configured to implement a portion of said proximity signal generator.

30 **29.** The apparatus of claim **12** wherein said processor circuit is configured to cause said processed signals to include a representation of said proximity signal.

-46-

30. An apparatus operable to receive signals from a mobile transmitter in an electronic location monitoring system, the apparatus comprising:

means for generating a proximity signal in response to proximity of the apparatus relative to a reference position;

means for receiving signals from the mobile transmitter, said means for receiving having a signal reception threshold responsive to said proximity signal, such that signals from the mobile transmitter that have a signal strength below said signal reception threshold are rejected and such that signals from the mobile transmitter that have a signal strength above said signal reception threshold are received; and

means for processing signals received by said receiver to produce processed signals, said means for processing being operable to communicate with a transmitter to cause the transmitter to transmit said processed signals to a monitoring station.

31. The apparatus of claim 30 wherein said means for receiving is operable to decrease said signal reception threshold when said proximity signal indicates the apparatus is in proximity to said reference position and operable to increase said signal reception threshold when said proximity signal indicates apparatus is not in proximity to said reference position.

32. A method for switching monitoring units in an electronic location monitoring system comprising a mobile transmitter operable to transmit to at least one of first and second monitoring units operable to communicate with a common monitoring station, the method comprising:

-47-

detecting proximity of the first monitoring unit relative to the second monitoring unit;

5 producing a proximity signal in response to detecting proximity
of the first monitoring unit relative to the second monitoring unit,
for reception by the first monitoring unit to cause the first
monitoring unit to enter a receive mode in which processing of
10 signals received from the mobile transmitter by the first
monitoring unit is permitted when the first monitoring unit is not
in proximity to the second monitoring unit or a low power mode
in which processing of signals received from the mobile
transmitter by the first monitoring unit is prevented when the first
monitoring unit is in proximity to the second monitoring unit; and

15 causing the second monitoring unit to receive and process
signals from the mobile transmitter when said proximity signal
indicates the first monitoring unit is in proximity to the second
monitoring unit and causing the second monitoring unit to cease
20 receiving signals from the mobile transmitter when said
proximity signal indicates the first monitoring unit is not in
proximity to the second monitoring unit.

25 **33.** The method of claim **32** further comprising causing said proximity
signal to indicate the first monitoring unit is in proximity to the second
monitoring unit when the first monitoring unit is coupled to a docking
station associated with the second monitoring unit.

30 **34.** The method of claim **33** further comprising causing said proximity
signal to indicate the first monitoring unit is not in proximity to the
second monitoring unit when the first monitoring unit is uncoupled from
a docking station associated with the second monitoring unit.

-48-

5 **35.** The method of claim **32** wherein detecting comprises measuring, near the second monitoring unit, signal strength of signals received from the mobile transmitter, and wherein said proximity signal is produced in response to measured signal strength.

10 **36.** The method of claim **35** causing said proximity signal to indicate the first monitoring unit is in proximity to the second monitoring unit when measured signal strength meets a first signal strength criterion.

15 **37.** The method of claim **36** wherein said first signal strength criterion is met when said measured signal strength is above a first signal strength threshold value.

20 **38.** The method of claim **37** causing said proximity signal to indicate the first monitoring unit is not in proximity to the second monitoring unit when measured signal strength meets a second signal strength criterion.

25 **39.** The method of claim **38** wherein said second signal strength criterion is met when said measured signal strength is below a second signal strength threshold value.

30 **40.** The method of claim **39** wherein said first and second signal strength threshold values are the same.

35 **41.** The method of claim **32** wherein detecting comprises receiving position signals at the first monitoring unit, said position signals representing a geographical position of the first monitoring unit, and producing said proximity signal in response to said position signals.

-49-

42. The method of claim **41** causing said proximity signal to indicate the first monitoring unit is in proximity to the second monitoring unit when said position signals meet a first position criterion.

5 **43.** The method of claim **42** wherein said first position criterion is met when said position signals indicate the first monitoring unit is within a first range of a reference position.

10 **44.** The method of claim **43** causing said proximity signal to indicate the first monitoring unit is not in proximity to the second monitoring unit when said position signals meet a second position criterion.

15 **45.** The method of claim **44** wherein said second position criterion is met when said position signals indicate the first monitoring unit is within a second range of said reference position.

46. The method of claim **45** wherein said reference position represents an approximate geographical position of the second monitoring unit.

20 **47.** The method of claim **32** wherein producing said proximity signal comprises causing a message to be transmitted to the first monitoring unit.

25 **48.** The method of claim **47** wherein causing a message to be transmitted to the first monitoring unit comprises causing a message to be transmitted to the first monitoring unit through a messaging service.

30 **49.** The method of claim **48** wherein causing a message to be transmitted to the first monitoring unit through a messaging service comprises causing a Short Messaging Service (SMS) message to be transmitted to the first monitoring unit.

-50-

50. The method of claim 49 wherein said SMS message includes a power down command when the first monitoring unit is in proximity to the second monitoring unit and wherein said SMS message includes a power up command when the first monitoring unit is not in proximity to the second monitoring unit.

51. An apparatus for switching monitoring units in an electronic location monitoring system comprising a mobile transmitter operable to transmit to at least one of first and second monitoring units operable to process signals received from the mobile transmitter and transmit processed signals to a monitoring station, the apparatus comprising:

a detector operable to produce a proximity signal indicating proximity of the first monitoring unit relative to the second monitoring unit;

a first transmitter operable to cause said proximity signal to be communicated to the first monitoring unit such that, when the proximity signal indicates the first monitoring unit is in proximity to the second monitoring unit the first monitoring unit enters a low power mode in which signals are not received from the mobile transmitter by the first monitoring unit and when the proximity signal indicates that the first monitoring unit is not in proximity to the second monitoring unit the first monitoring unit enters a receive mode in which signals from the mobile transmitter are received and processed by the first monitoring unit; and

a second transmitter operable to cause said proximity signal to be transmitted to the second monitoring unit such that in response to the proximity signal the second monitoring unit receives and processes signals from the mobile transmitter

-51-

when said proximity signal indicates the first monitoring unit is in proximity to the second monitoring unit and ceases receiving signals from the mobile transmitter when said proximity signal indicates the first monitoring unit is not in proximity to the second monitoring unit.

5

- 52.** The apparatus of claim **51** wherein said detector is operable to cause said proximity signal to indicate the first monitoring unit is in proximity to the second monitoring unit when the first monitoring unit is coupled to a docking station.

10

- 53.** The apparatus of claim **52** wherein said detector is operable to cause said proximity signal to indicate the first monitoring unit is not in proximity to the second monitoring unit when the first monitoring unit is uncoupled from a docking station.

15

- 54.** The apparatus of claim **51** wherein said detector comprises a signal strength detector operable to detect signal strength of signals received from the mobile transmitter, and wherein said detector produces said proximity signal in response to measured signal strength.

20

- 55.** The apparatus of claim **54** wherein said detector causes said proximity signal to indicate the first monitoring unit is in proximity to the second monitoring unit when measured signal strength meets a first signal strength criterion.

25

- 56.** The apparatus of claim **55** wherein said detector determines said first signal strength criterion is met when said measured signal strength is above a first signal strength threshold value.

30

- 57.** The apparatus of claim **56** wherein said detector causes said proximity signal to indicate the first monitoring unit is not in proximity to the

-52-

second monitoring unit when measured signal strength meets a second signal strength criterion.

5 **58.** The apparatus of claim **57** wherein said detector determines said second signal strength criterion is met when said measured signal strength is below a second signal strength threshold value.

10 **59.** The apparatus of claim **58** wherein said first and second signal strength threshold values are the same.

15 **60.** The apparatus of claim **51** wherein said detector comprises a position signal receiver operable to receive position signals representing a geographical position of the first monitoring unit, and wherein said detector produces said proximity signal in response to said position signals.

20 **61.** The apparatus of claim **60** wherein said detector causes said proximity signal to indicate the first monitoring unit is in proximity to the second monitoring unit when said position signals meet a first position criterion.

25 **62.** The apparatus of claim **61** wherein said detector determines said first position criterion is met when said position signals indicate the first monitoring unit is within a first range of a reference position.

30 **63.** The apparatus of claim **62** wherein said detector causes said proximity signal to indicate the first monitoring unit is not in proximity to the second monitoring unit when said position signals meet a second position criterion.

35 **64.** The apparatus of claim **63** wherein said detector determines said second position criterion is met when said position signals indicate the first monitoring unit is within a second range of said reference position.

65. The apparatus of claim 64 wherein said reference position represents an approximate geographical position of the second monitoring unit.

5 66. The apparatus of claim 51 wherein said first transmitter is operable to transmit a message representing said proximity signal to the first monitoring unit.

10 67. The apparatus of claim 66 further comprising a first messaging service interface operable to transmit a message to the first monitoring unit through a messaging service.

15 68. The apparatus of claim 67 wherein said first messaging service interface is operable to transmit a message compatible with a Short Messaging Service (SMS) format to be transmitted to the first monitoring unit.

20 69. The apparatus of claim 51 wherein said second transmitter is operable to transmit a message representing said proximity signal to the second monitoring unit.

25 70. The apparatus of claim 69 further comprising a second messaging service interface operable to transmit a message to the second monitoring unit through a messaging service.

30 71. The apparatus of claim 70 wherein said second messaging service interface is operable to transmit a message compatible with a Short Messaging Service (SMS) format to be transmitted to the second monitoring unit.

72. The apparatus of claim 51 further comprising a modular battery unit, operable to power the first monitoring unit, said detector, said first

-54-

transmitter and said second transmitter being incorporated into said modular battery unit.

5 **73.** The apparatus of claim **51** further comprising a housing, wherein said detector, said first transmitter, said second transmitter and the second monitoring unit are housed in said housing.

10 **74.** The apparatus of claim **73** wherein said housing has a docking station to facilitate docking of the first monitoring unit.

15 **75.** An apparatus for use in an electronic location monitoring system, the apparatus comprising:

 a first monitoring unit comprising:

15 a first receiver operable to receive signals from a mobile transmitter on a person to be monitored, the first receiver having a low power mode in which signals are not received from the mobile transmitter and a receive mode
20 in which signals from the mobile transmitter are received;

 a processor circuit for processing signals received by said first receiver to produce processed signals; and

25 a transmitter operable to transmit said processed signals to a monitoring station; and

 a signaling unit comprising:

30 a detector operable to produce a proximity signal indicating proximity of the first monitoring unit relative to a

-55-

second monitoring unit operable to receive, process and transmit signals to the monitoring station;

5 said first receiver being responsive to said proximity signal such that, when the proximity signal indicates the first monitoring unit is in proximity to the second monitoring unit the first receiver is placed in the low power mode and when the proximity signal indicates that
10 the first monitoring unit is not in proximity to the second monitoring unit the first receiver enters the receive mode;

15 a proximity signal transmitter operable to cause said proximity signal to be transmitted to the second monitoring unit, whereby in response to the proximity signal the second monitoring unit receives and processes signals from the mobile transmitter when said proximity signal indicates said first monitoring unit is in proximity to the second monitoring unit and ceases receiving signals
20 from the mobile transmitter when said proximity signal indicates said first monitoring unit is not in proximity to the second monitoring unit,

25 whereby said first monitoring unit receives and processes signals from the mobile transmitter and the second monitoring unit does not receive and process signals from the mobile transmitter when said first monitoring unit is not in proximity to the second monitoring unit and
30 whereby the second monitoring unit receives and processes signals from the mobile transmitter and said first monitoring unit does not receive and process signals from the mobile transmitter when said first monitoring unit is in proximity to the second monitoring unit.

-56-

5 **76.** The apparatus of claim **75** further comprising a modular battery unit operable to power said first monitoring unit and said signaling unit and wherein said first monitoring unit and said signaling unit are housed in said modular battery unit.

10 **77.** The apparatus of claim **75** further comprising a portable wireless communication appliance, said apparatus being incorporated into said portable wireless communication appliance.

15 **78.** The apparatus of claim **77** wherein said portable wireless communication appliance includes a cellular telephone.

20 **79.** The apparatus of claim **75** wherein said detector is operable to cause said proximity signal to indicate said first monitoring unit is in proximity to the second monitoring unit when said first monitoring unit is coupled to a docking station.

25 **80.** The apparatus of claim **79** wherein said detector is operable to cause said proximity signal to indicate said first monitoring unit is not in proximity to the second monitoring unit when said first monitoring unit is uncoupled from a docking station.

30 **81.** The apparatus of claim **75** wherein said detector comprises a signal strength detector operable to detect signal strength of signals received from said mobile transmitter, and wherein said detector produces said proximity signal in response to measured signal strength.

82. The apparatus of claim **81** wherein said detector causes said proximity signal to indicate said first monitoring unit is in proximity to the second monitoring unit when measured signal strength meets a first signal strength criterion.

83. The apparatus of claim 82 wherein said detector determines said first signal strength criterion is met when said measured signal strength is above a first signal strength threshold value.

84. The apparatus of claim **83** wherein said detector causes said proximity signal to indicate said first monitoring unit is not in proximity to the second monitoring unit when measured signal strength meets a second signal strength criterion.

85. The apparatus of claim **84** wherein said detector determines said second signal strength criterion is met when said measured signal strength is below a second signal strength threshold value.

86. The apparatus of claim **85** wherein said first and second signal strength threshold values are the same.

87. The apparatus of claim **75** wherein said detector comprises a position signal receiver operable to receive position signals representing a geographical position of said first monitoring unit, and wherein said detector produces said proximity signal in response to said position signals.

88. The apparatus of claim **87** wherein said detector causes said proximity signal to indicate said first monitoring unit is in proximity to the second monitoring unit when said position signals meet a first position criterion.

89. The apparatus of claim 88 wherein said detector determines said first position criterion is met when said position signals indicate said first monitoring unit is within a first range of a reference position.

-58-

90. The apparatus of claim **89** wherein said detector causes said proximity signal to indicate said first monitoring unit is not in proximity to the second monitoring unit when said position signals meet a second position criterion.

5

91. The apparatus of claim **90** wherein said detector determines said second position criterion is met when said position signals indicate said first monitoring unit is within a second range of said reference position.

10

92. The apparatus of claim **91** wherein said reference position represents an approximate geographical position of the second monitoring unit.

15

93. The apparatus of claim **75** wherein said proximity signal transmitter is operable to transmit a message representing said proximity signal to the second monitoring unit.

94. The apparatus of claim **93** further comprising a messaging service interface operable to transmit a message to the second monitoring unit through a messaging service.

20

95. The apparatus of claim **94** wherein said messaging service interface is operable to transmit a message compatible with a Short Messaging Service (SMS) format to be transmitted to the second monitoring unit.

25

96. A docking apparatus for a first monitoring unit in an electronic location monitoring system in which the first monitoring unit has a first receiver operable to receive signals from a mobile transmitter on a person to be monitored and wherein said first monitoring unit is operable to process said signals to produce processed signals and to transmit said processed signals to a monitoring station, the docking apparatus comprising:

30

-59-

a second monitoring unit comprising:

5 a second receiver operable to receive signals from the mobile transmitter, the second receiver having a non-receive mode in which signals are not received from the mobile transmitter and a receive mode in which signals from the mobile transmitter are received;

10 a processor circuit for processing signals received by said second receiver to produce processed signals; and

a transmitter operable to transmit said processed signals to a monitoring station; and

15 a signaling unit comprising:

a detector operable to produce a proximity signal indicating proximity of the first monitoring unit relative to the second monitoring unit;

20 said second receiver being responsive to said proximity signal such that, when the proximity signal indicates the first monitoring unit is in proximity to the second monitoring unit the second receiver is placed in the receive mode and when the proximity signal indicates that the first monitoring unit is not in proximity to the second receiver is placed in the non-receive mode;

25 a proximity signal transmitter operable to cause said proximity signal to be transmitted to the first monitoring unit, whereby in response to the proximity signal the first monitoring unit receives and processes signals from the

30

-60-

mobile transmitter when said proximity signal indicates said first monitoring unit is not in proximity to the second monitoring unit and ceases receiving signals from the mobile transmitter when said proximity signal indicates said first monitoring unit is in proximity to the second monitoring unit,

whereby said first monitoring unit receives and processes signals from the mobile transmitter and the second monitoring unit does not receive and process signals from the mobile transmitter when said first monitoring unit is not in proximity to the second monitoring unit and whereby the second monitoring unit receives and processes signals from the mobile transmitter and said first monitoring unit does not receive and process signals from the mobile transmitter when said first monitoring unit is in proximity to the second monitoring unit.

97. The apparatus of claim **96** wherein said docking station apparatus includes a docking port to which the first monitoring unit may be coupled.

98. The apparatus of claim **97** wherein said detector is operable to cause said proximity signal to indicate the first monitoring unit is in proximity to said second monitoring unit when the first monitoring unit is coupled to said docking station.

99. The apparatus of claim **97** wherein said detector is operable to cause said proximity signal to indicate the first monitoring unit is not in proximity to said second monitoring unit when the first monitoring unit is uncoupled from said docking station.

-61-

100. The apparatus of claim **96** wherein said detector comprises a signal strength detector operable to detect signal strength of signals received from said mobile transmitter, and wherein said detector produces said proximity signal in response to measured signal strength.

5

101. The apparatus of claim **100** wherein said detector causes said proximity signal to indicate the first monitoring unit is in proximity to said second monitoring unit when measured signal strength meets a first signal strength criterion.

10

102. The apparatus of claim **101** wherein said detector determines said first signal strength criterion is met when said measured signal strength is above a first signal strength threshold value.

15

103. The apparatus of claim **102** wherein said detector causes said proximity signal to indicate the first monitoring unit is not in proximity to said second monitoring unit when measured signal strength meets a second signal strength criterion.

20

104. The apparatus of claim **103** wherein said detector determines said second signal strength criterion is met when said measured signal strength is below a second signal strength threshold value.

25

105. The apparatus of claim **104** wherein said first and second signal strength threshold values are the same.

30

106. The apparatus of claim **63** wherein said detector comprises a position signal receiver operable to receive position signals representing a geographical position of the first monitoring unit, and wherein said detector produces said proximity signal in response to said position signals.

-62-

107. The apparatus of claim **106** wherein said detector causes said proximity signal to indicate the first monitoring unit is in proximity to said second monitoring unit when said position signals meet a first position criterion.

5

108. The apparatus of claim **107** wherein said detector determines said first position criterion is met when said position signals indicate the first monitoring unit is within a first range of a reference position.

10

109. The apparatus of claim **108** wherein said detector causes said proximity signal to indicate the first monitoring unit is not in proximity to said second monitoring unit when said position signals meet a second position criterion.

15

110. The apparatus of claim **109** wherein said detector determines said second position criterion is met when said position signals indicate the first monitoring unit is within a second range of said reference position.

20

111. The apparatus of claim **110** wherein said reference position represents an approximate geographical position of said second monitoring unit.

112. The apparatus of claim **96** wherein the first transmitter is operable to transmit a message representing said proximity signal to the first monitoring unit.

25

113. The apparatus of claim **112** further comprising a messaging service interface operable to transmit a message to the first monitoring unit through a messaging service.

30

114. The apparatus of claim **113** wherein said messaging service interface is operable to transmit a message compatible with a Short Messaging Service (SMS) format to be transmitted to the first monitoring unit.